Solid Waste Management in Emergencies for Camps

What is solid waste?

Solid waste, here means general domestic garbage such as food waste, ash and other packaging materials; fecal matter disposed off in garbage, plastic water bottles and other plastic materials from emergency supplies; rubble, mud and slury deposited by the flood and fallen trees and rocks etc obstructing transport and communications.

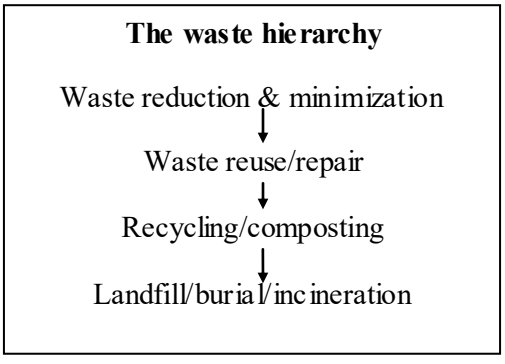
Why is solid waste management important during emergencies?

The solid waste management is a crucial component of camp management because there are health risks associated with inadequate management of solid waste. Inadequate management could result in creating breeding pools for mosquitoes and result in dengue, malaria, etc and food for rodents resulting in leptospirosis and other similar infections. Breathing difficulties can arise from fungi that develop on garbage tips, especially when conditions continue to be damp. Sharp items like broken glass, syringes etc can be a hazard to people walking through the area and also to the sanitary workers. Garbage indiscriminately dumped can contaminate water supplies and existing water sources.

Assessment

What types and volumes of waste are being produced every day? Are their any hazardous wastes that require attention such as disposable needles, broken glass or plastic – Ask the sanitary workers onsite, they will provide an assessment. The process of disposal is sequential and ensures safe and scientific disposal.[see Box 1]

Box 1. Process of waste management



Protecting the sanitary workers

It is important to offer protection from physical injury to those undertaking the cleaning operations. People in the camp can take up this responsibility under appropriate management and

supervision. In case of any minor injuries amongst workers, the site for vaccinations against tetanus should be identified in advance.

Collection of domestic waste

Provide communal bins for waste disposal. Communal bins need to be segregated for organic, plastic, sanitary (including sanitary napkins and other forms of diapers)and paper wastes. For example, in general, a 100 litre bin will be sufficient for 200 people per day on the whole. Ensure that these bins can be easily lifted by providing ties or handles on two sides. Gauge the volumes of different types of waste and provide disposal bins accordingly. Ensure that the size of the bin and its weight when full can be handled by one person. At best, an adult can handle a weight of about 25 kilograms but this should be adjusted in keeping with available resources. A bin can be made of locally available resources such as lined baskets, buckets with handles and lid, well rings, sacks from packaging materials that are properly secured, etc.

Ensure that the toilets have separate covered bins (these could be buckets with covers or any other lined basket with a cover) to collect sanitary waste. Often sanitary napkins and diapers have plastic liners. Require that during disposal, the plastic liners are removed and disposed separately.

Recycling

To the extent other packaging materials that can be re-used should be recycled - thick plastic packaging materials can be used as rain guards or liners for bins; wooden packaging materials can be used as tinder or for making other stands for storage etc. Only those materials that cannot be re-used should be disposed.

Medical care in camps and disposal of waste

Provide separate disposal mechanisms for materials such as syringes and other medical wastes that may be generated during medical examinations in camps. This waste should be treated as medical and/or hazardous waste and disposed off appropriately.

Collection and transport

For communal bins: Waste from each of these filled bins needs to be individually collected and transported to a central collection point or disposal site. Transport means can be locally available means such as wheel barrows or carts that are able to accommodate the volumes and handled by the community. Ensure that the source segregation is maintained during transport process.

For sanitary bins in toilets: To the extent possible encourage use of sanitary napkins made of cotton or other biodegradable materials. If not, encourage removal of the plastic layer separately

while it is being disposed and provide separate bins for the plastic liners and the biodegradable products.

Pit disposal of wastes

Organic waste: Organic waste can be composed as putting it into the pit for disposal. However care needs to be taken as it can generate methane gas that is an environmental hazard. [see Fig.1]

- The pit should be about 10 metres from the dwellings and more than 15 metres from the water source.
- If pit mechanism is envisaged, the site should be secured to avoid accidents and scavenging using available means of fencing.
- The pit should be dug to be 1 metre by 1.5 metres. The soil obtained by digging should be kept on the side so as to allow for daily covering of waste to reduce smells, flies rodents etc.
- It should be approximately 1.5 metres above the water table
- When waste reaches just below the surface, it should be compacted and covered with soil.
- Repeat process at another site, in a similar way.

Pit burning of sanitary napkins, diapers etc[1]:

- Dig a pit 0.5 metres x 0.5 metres x 0.5 metres or 1.0 metres x 1.0 metres x 1.0 metres.
- Burning should be carried out using dried wood or kerosene or fuel. During burning safety measures should be taken to avoid direct contact
- Care should also ensure that the smoke does not blow in the direction of the dwellings as these could cause harm to the residents who could be allergic.

Disposal of other wastes

Plastic, paper and medical waste should be disposed off through a centralized mechanism that is not part of this guidance.

References

1. WHO, 2013. Technical notes on drinking-water, sanitation and hygiene in emergencies. Solid waste management in emergencies WHO, Geneva.
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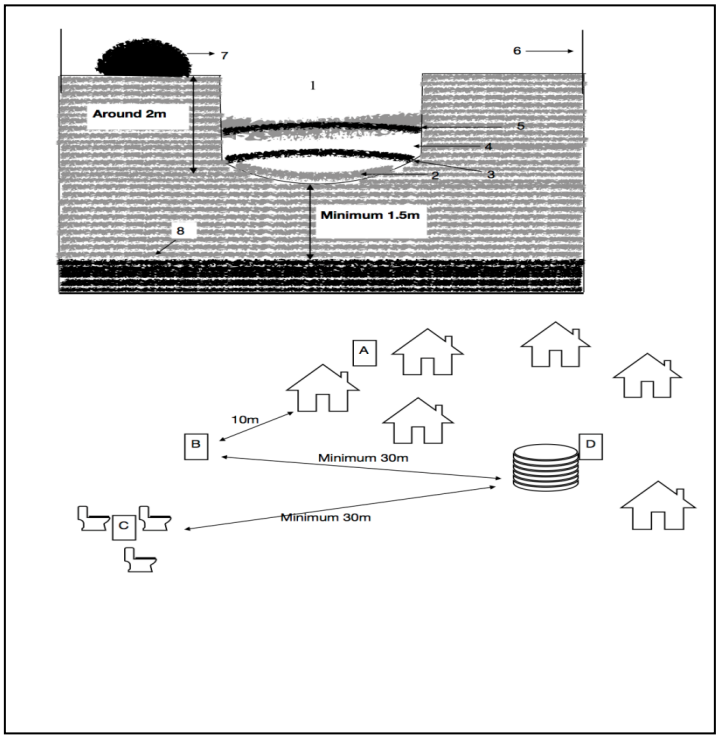
[1] Central Pollution Control Board, 2018. Guidelines for Management of Sanitary Waste. As per solid waste management Rules, 2016; Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Govt of India, Delhi 110032. Accessed from URL - http://cpcb.nic.in/uploads/plasticwaste/Final_Sanitary_Waste_Guidelines_15.05.2018.pdf on August 20 2018

2. Bjerregaard M and Meekings H; 2008. OXFAM Technical Brief – Domestic and Refugee Camp Waste Management Collection and Disposal. URL- https://oxfamilibrary.openrepository.com/bitstream/handle/10546/126686/tbn15-domestic-refugee-camp-waste-management-collection-disposal-210508-en.pdf?sequence=5 accessed on August 20, 2018
3. Central Pollution Control Board, 2018. Guidelines for Management of Sanitary Waste. As per solid waste management Rules, 2016; Central Pollution Control Board, Ministry of Environment, Forest & Climate Change, Govt of India, Delhi 110032. Accessed from URL - http://cpcb.nic.in/uploads/plasticwaste/Final_Sanitary_Waste_Guidelines_15.05.2018.pdf on August 20 2018.

Fig 1. Basic Design of Household/Communal Refuse Pit
(Courtesy of MSF)

REFUSE PIT



1. Pit
2. Refuse, day 1
3. Earth, day 1
4. Refuse, day 2
5. Earth, day 2
6. Fence
7. Excavated earth
8. Water table
A. Dwellings
B. Refuse pits
C. Latrines
D. Well

Source: OXFAM Technical Brief-Domestic and refugee camp waste management and collection and disposal. URL: https://oxfamilibrary.openrepository.com/bitstream/handle/10546/126686/tbn15-domestic-refugee-camp-waste-management-collection-disposal-210508-en.pdf?sequence=5 accessed on August 20, 2018